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Instruction Bulletin

63230-304-200

POWERLOGIC® Ethernet Communications Card



Merlin Gerin
Modicon
Square D
Telemecanique

NOTICE

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

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⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

CAUTION

CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result in** property damage.

NOTE: Provides additional information to clarify or simplify a procedure.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. This document is not intended as an instruction manual for untrained persons. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this manual.

Class A FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designated to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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CHAPTER 1—INTRODUCTION

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OVERVIEW

This document contains installation and operation instructions for the POWERLOGIC® Ethernet Communication Card (ECC). Before installing the ECC (shown in Figure 1–1), you should have a general understanding of the POWERLOGIC Power Monitoring and Control System and related products and technology.

For more information about the POWERLOGIC System, refer to the following documents:

- POWERLOGIC System Architecture and Application Guide
- POWERLOGIC System Manager Software 3000 User's Guide
- POWERLOGIC Circuit Monitor Series 4000 Instruction Bulletin

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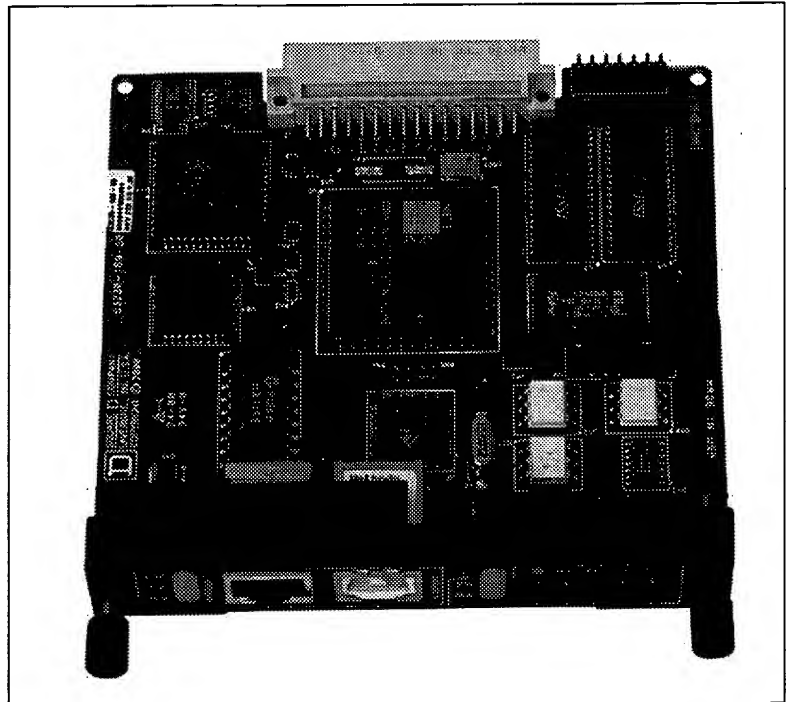


Figure 1–1 Ethernet Communications Card

**WHAT IS AN ETHERNET
COMMUNICATION CARD?****REDACTED**

The POWERLOGIC Ethernet Communication Card (ECC) is an optional add-on card for the Series 4000 Circuit Monitor. The ECC inserts into an option slot in the circuit monitor. The primary function of the ECC is to provide a fast, direct Ethernet communication connection for the Series 4000 Circuit Monitor and allow Ethernet gateway functionality to a wide variety of POWERLOGIC-compatible MODBUS, JBUS, and/or SY/MAX devices. A typical application example is shown in Figure 1-2.

The ECC also allows you to access custom HTML pages (stored in the circuit monitor) via a standard web browser. The pages are best viewed using Internet Explorer version 5.0 or higher. These HTML pages may display information from the host circuit monitor and/or daisy-chained devices.

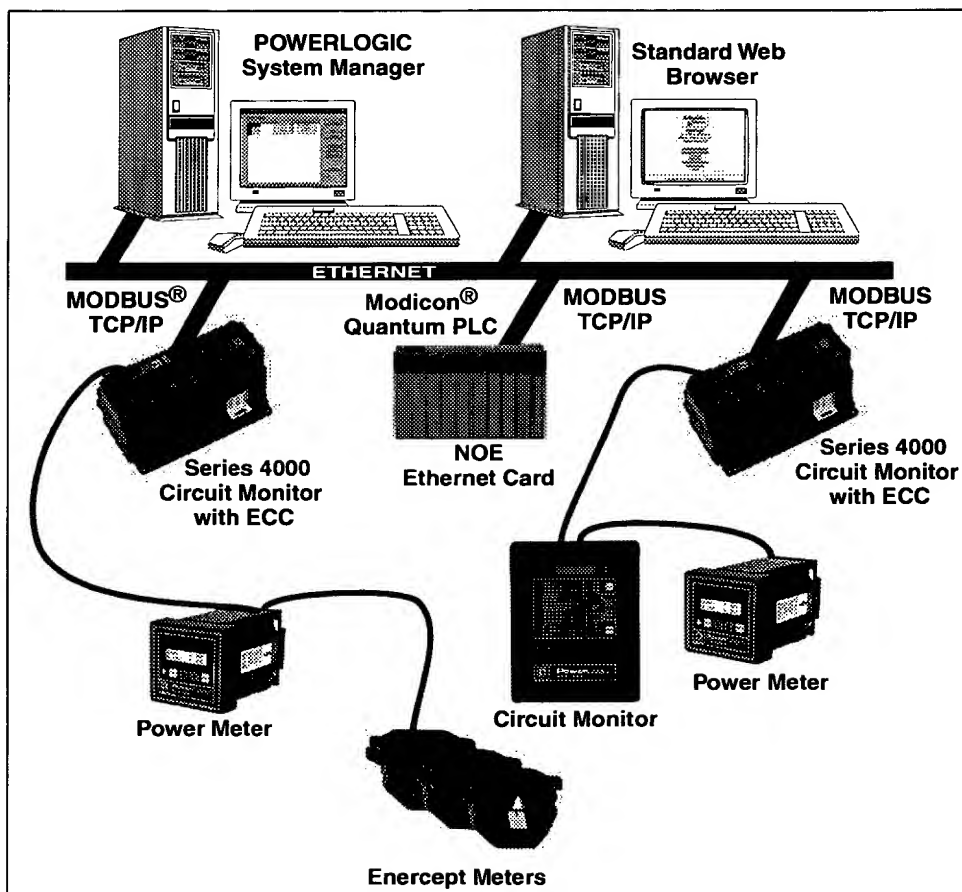


Figure 1-2 System architecture example showing Series 4000 Circuit Monitors with Ethernet Communications Cards installed

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CHAPTER 2—SAFETY PRECAUTIONS

This chapter contains important safety precautions that must be followed before attempting to install, service, or maintain electrical equipment. Carefully read and follow the safety precautions outlined below.

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⚠ DANGER

HAZARD OF ELECTRIC SHOCK, BURN, OR EXPLOSION

- Only qualified workers should install this equipment. Such work should be performed only after reading this entire set of instructions.
- NEVER work alone.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of backfeeding.
- Turn off all power supplying the Series 4000 Circuit Monitor and the equipment in which it is installed before installing and wiring the ECC. Be aware that the circuit monitor may be connected to a separate power source derived from the equipment in which it is installed.
- Also turn off all power supplying any option card already installed in the Series 4000 Circuit Monitor before installing and wiring the ECC.
- Beware of potential hazards, wear personal protective equipment, and carefully inspect the work area for tools and objects that may have been left inside the equipment.
- The successful operation of this equipment depends upon proper handling, installation, and operation. Neglecting fundamental installation requirements may lead to personal injury as well as damage to electrical equipment or other property.

Failure to observe these instructions will result in death or serious injury.

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With a few simple set up steps, you can use your ECC “right out of the box” to fully monitor the Series 4000 Circuit Monitor into which you will install the ECC. To do so, follow steps 1 through 8 below.

To install and set up the ECC for full functionality, complete the remaining steps.

1. The “host” circuit monitor is the Series 4000 Circuit Monitor into which the ECC will be installed. Turn off all power supplying the host circuit monitor and the equipment in which it is installed (see “Chapter 2—Safety Precautions” on page 5 and the safety precautions listed under “Installing The ECC” on page 13). Be aware that the circuit monitor may be connected to a separate power source derived from the equipment in which it is installed.
2. Install the ECC into the circuit monitor (for details, see “Installing The ECC” on page 13).
3. Wire the ECC (see “Wiring” on page 16).
4. If the host circuit monitor is mounted in an enclosure, make sure to remove all tools from the enclosure. Then install all covers and close all doors to the enclosure.
5. Restore power to the circuit monitor and any other equipment you de-energized to install and wire the ECC (see page 20).
6. Set up the following Ethernet parameters from the Series 4000 Circuit Monitor display (see “Setting Up The ECC Via The Series 4000 Circuit Monitor Display” on page 22):
 - IP Address
 - Subnet Mask
 - Router Address
 - Ethernet Port Type

NOTE: To set up the ECC via the circuit monitor, the circuit monitor must be running firmware version 10.30 or higher.

7. Launch a standard web browser.
8. Type the IP address (for example, 163.196.212.89) into the URL field.
9. Log in with the administrator password (the default is “admin”) and you are ready to configure or view the Series 4000 Circuit Monitor HTML pages.

To fully set up the ECC and use its monitoring, password administration, and diagnostic features, follow the remaining steps:

1. Modify Ethernet parameters (see “Communications Settings” on page 26).
2. Set up the serial communication port (see “RS-485 Serial Port Setup” on page 26).
3. Identify the RS-485 daisy-chained devices (see “Device List” on page 27).
4. Configure user passwords (see “Password Administration” on page 30).
5. Perform advanced setup if necessary (see “Advanced Setup” on page 31).

DEFAULT SETTINGS

Table 3–1 shows available values for ECC parameters and default values for those parameters.

Table 3–1: ECC Parameters and Default Values

Parameter	Value Range	Selection Description	Default
Password Administration 1. Administrator 2. Users 3. Access Level	1. Up to 8 alphanumeric characters 2. Up to 8 alphanumeric characters 3. None, Read Only, Full	1. Master password account 2. 3 Users' password accounts 3. User's access level for that page	1. admin 2. master, engineer, operator 3. See page 30 for details.
Communications Settings—RS-485 1. Baud Rate 2. Parity 3. Mode	1. 1200, 2400, 4800, 9600, 19200, 38400 2. Even, None 3. 4-Wire, 2-Wire	1. RS-485 Baud Speed 2. Parity 3. 4-wire or 2-wire daisy-chained devices	1. 9600 2. Even 3. 4-Wire
HTML User Timeout	1–255 Minutes	Maximum time allowed for a user to stay idle before the ECC expires that user's access.	10 minutes
Timeout for Circuit Monitor	3 to 10 Seconds	Maximum time ECC will wait for requested information from the CM4000.	3 seconds
Timeout for RS-485 Port	3 to 10 Seconds	Maximum time the ECC will wait for requested information from the RS-485 daisy-chained devices.	5 seconds
Number of Viewable Devices	2 to 64	Number of available device identification slots displayed on the Device List HTML page.	16
Instantaneous Readings Refresh Rate	5 to 300 seconds	Update refresh rate for the ECC to poll information from the CM4000 and put in the instantaneous reading table.	10 seconds

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CHAPTER 4—INSTALLATION

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DESCRIPTION

This section identifies ECC components and provides installation instructions. Figure 4-1 shows the components of the ECC. Table 4-1 identifies those components and explains their functions.

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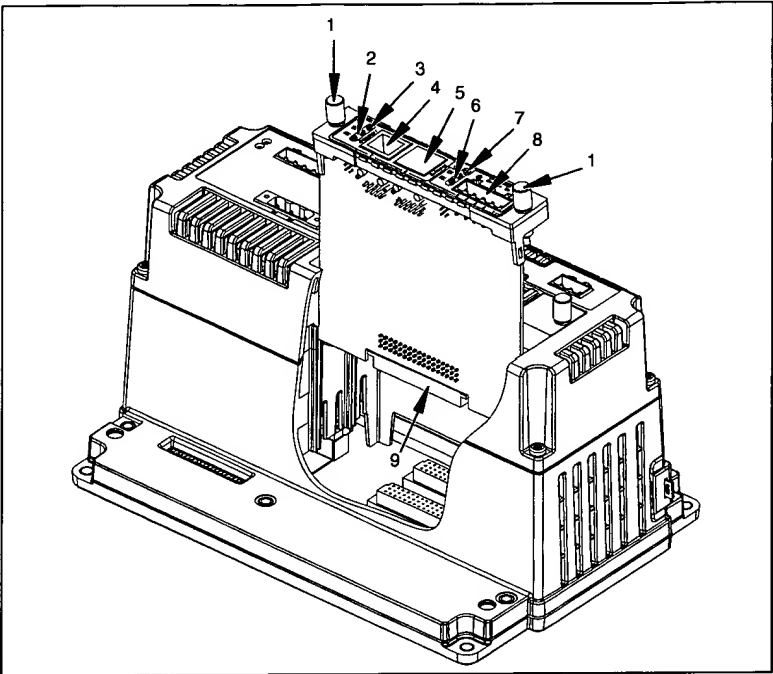


Figure 4-1 Identifying ECC components

Table 4-1: Ethernet Communication Card Components

Ref. No.	Item	Description
1	Retaining Screws	These screws secure the option card to the Series 4000 Circuit Monitor.
2	Ethernet Port LEDs	A yellow LED illuminates when the ECC is receiving data (RX) and a green LED illuminates when data is transmitted (TX).
3	Ethernet Link LED	This LED illuminates yellow steadily when there is a proper Ethernet connection.
4	10/100 BaseT Twisted Pair Port	This port drives a twisted pair cable up to 328 ft. (100 m). This port has a standard RJ-45 connector.
5	100BaseFX Port	The port is a duplex LC connector receptacle and is compatible with 1300 nm wavelength multimode fiber connections. The ECC on-board fiber-optic port allows the CM4000 to communicate with a fiber-optic based Ethernet LAN.
6	RS-485 LEDs	The yellow LED illuminates when the RS-485 port is receiving data (RX); the green LED illuminates when the RS-485 port is transmitting data (TX). Both LEDs flicker intermittently if there is a configuration error.
7	Power LED	This green LED illuminates steadily when power is received from the CM4000.
8	RS-485 Port	Used for communication with daisy-chained devices.
9	ECC/CM4000 Connector	This socket connects the ECC to the host Series 4000 Circuit Monitor.

INSTALLING THE ECC

This section provides information on installing the ECC, including communications wiring.

The ECC is designed as a plug-and play accessory for the CM4000. Follow these instructions to install the ECC into the circuit monitor.

REDACTED**⚠ DANGER****HAZARD OF ELECTRIC SHOCK, BURN, OR EXPLOSION**

- Turn off all power supplying the circuit monitor and the equipment in which it is installed before working on it. Be aware that the circuit monitor may be connected to a separate power source derived from which the equipment is installed.
- Use a properly rated voltage sensing device to confirm that all power is off.

Failure to follow these instructions will result in death or serious injury.

1. Turn off all power to the circuit monitor and the equipment in which it is installed. To turn off power to the circuit monitor, do this:
 - a. Disconnect the metered voltage either by removing the fuses from the potential transformer (PT secondaries) circuits or by turning off the voltage disconnect switch.
 - b. Short circuit the current transformer (CT) secondaries to remove the metered current.
 - c. Turn off the control power and any power sources to the auxiliary inputs and outputs.
 - d. Turn off power to any option cards already installed in the circuit monitor.
 - e. Always use a properly rated voltage sensing device to confirm that power is off.

CAUTION**ESD-SENSITIVE COMPONENTS**

Use an anti-static or grounding strap (customer-supplied) to ground yourself and discharge any static charge before installing the ECC. Static can damage electrostatic discharge-sensitive components in the circuit monitor and its accessories.

Failure to follow this instruction can result in equipment damage.

2. To discharge static, follow the instructions that come with your anti-static or grounding strap.

NOTE: We recommend using an anti-static or grounding strap until you have completed installation of the ECC.

3. On option slot A (Figure 4-2) of the circuit monitor, loosen the two retaining screws and remove the dust cover (Figure 4-3). Retain the dust cover for future use.

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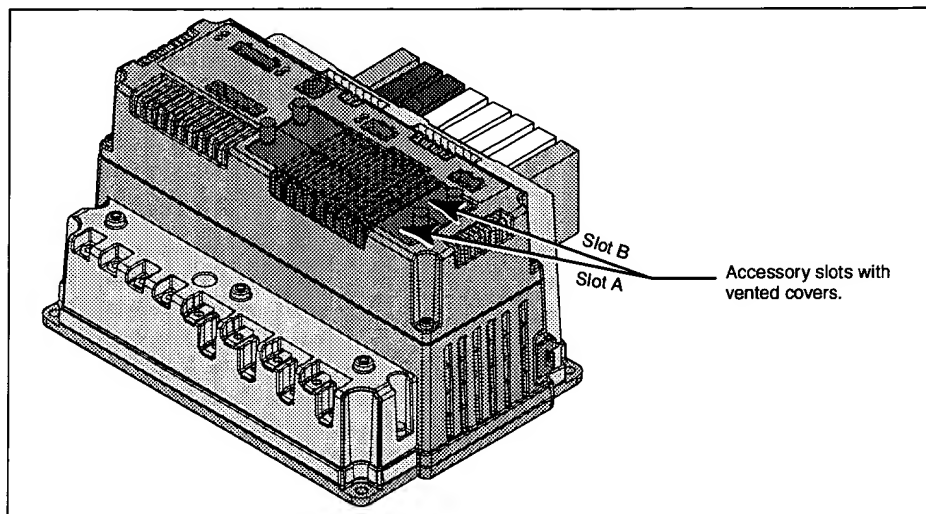


Figure 4-2 Circuit monitor option slot locations

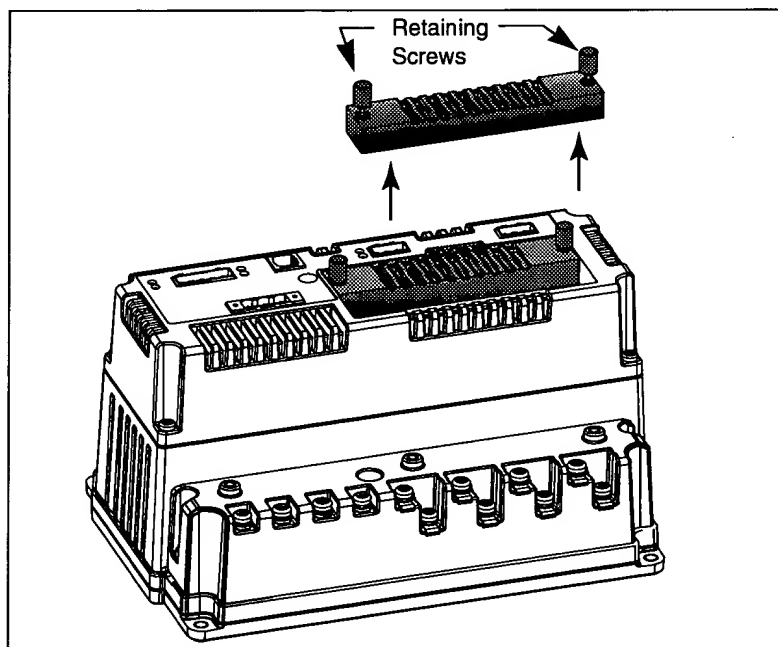


Figure 4-3 Removing the dust cover on the circuit monitor

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4. Orient the ECC and align with the grooves inside slot A as shown in Figure 4-4.
5. Slide the ECC down until it is firmly seated and the connectors on the card and the circuit monitor are engaged. The top of the card should be flush with the top of the circuit monitor.

NOTE: The connector pins bend easily. Do not force the card into the slot.

6. Hand tighten the retaining screws to secure the ECC to the circuit monitor.

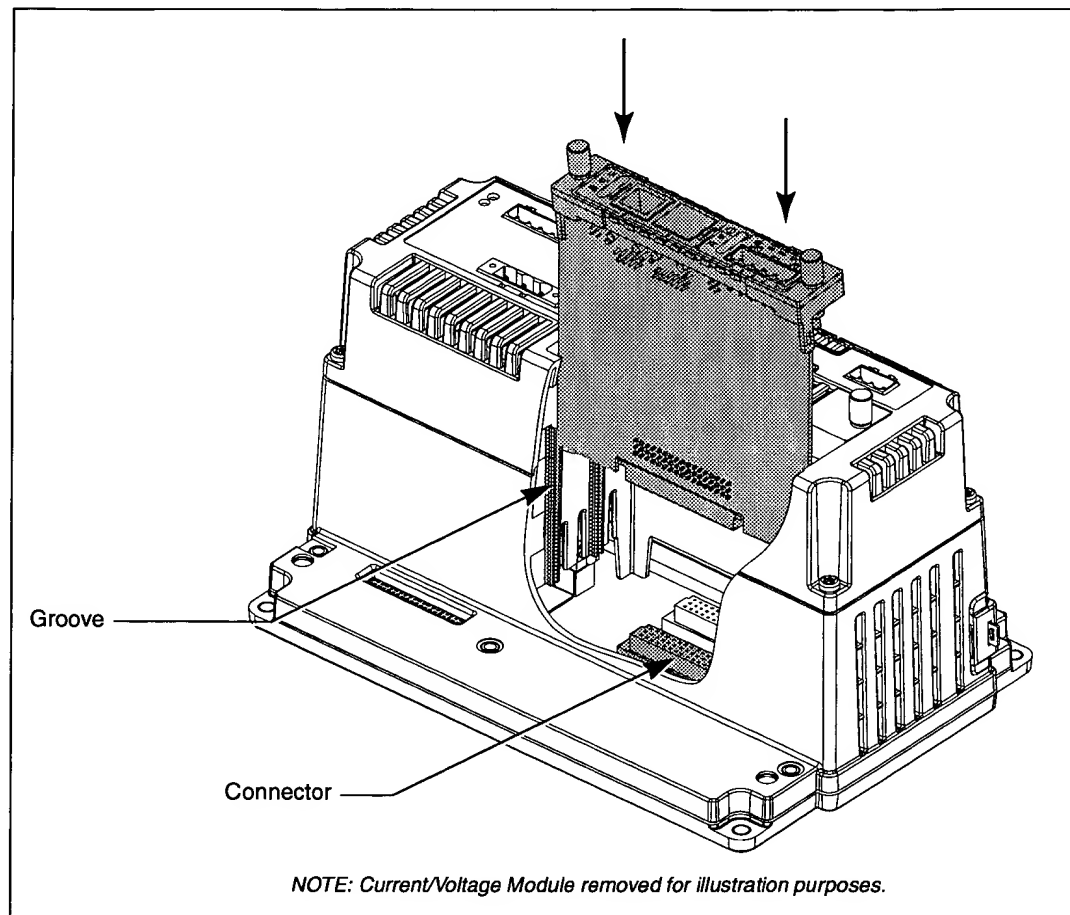


Figure 4-4 Installing the ECC into the circuit monitor

7. If the host circuit monitor is mounted in an enclosure, make sure to remove all tools from the enclosure. Then install all covers and close all doors to the enclosure.
8. Proceed to the next section, "Wiring" on page 16, and make all wiring connections as described. Do not restore power until communications wiring is complete.

WIRING

This section describes ECC control power and communications wiring.

Control Power

The ECC does not have its own control power supply. The ECC receives control power from the circuit monitor into which it is installed. The green power LED illuminates steadily when power is being received from the CM4000.

Communications

This section describes communications wiring for the RS-485 serial and the Ethernet ports.

RS-485 Serial Port

The RS-485 serial port is used for communications with daisy-chained devices and is designed to support up to 31 defined devices without a repeater (Figure 4-5), or up to 63 defined RS-485 devices with a repeater. The RS-485 enables communications via a 4-wire plus shield cable (Tx+, Tx-, Rx+, and Shld). It can also be configured for 2-wire plus shield.

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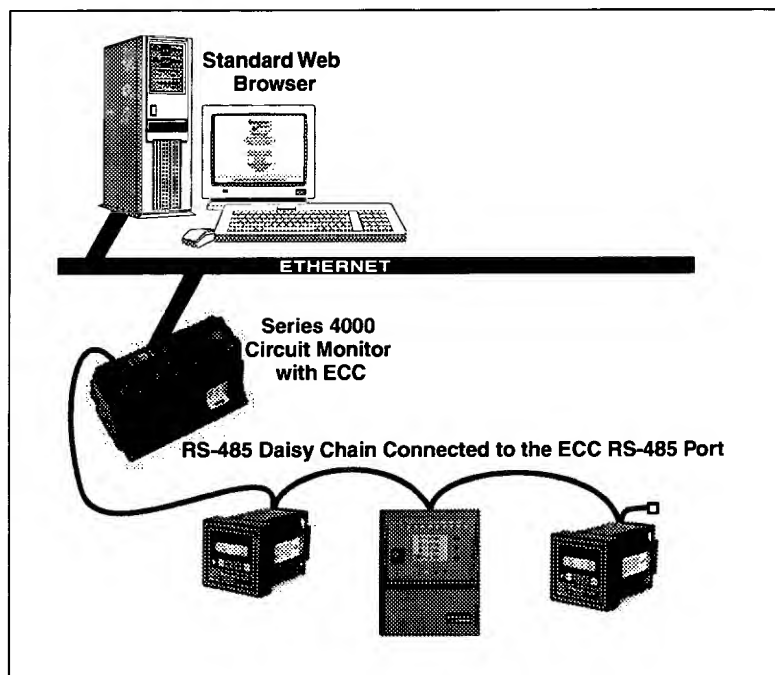


Figure 4-5 Daisy Chain connected to ECC RS-485 port

For 4-wire communication, Belden 8723 or 9842 cable or equivalent is recommended. For 2-wire communication, Belden 9841 or equivalent is recommended.¹

1. If Enercept® meters are on the daisy chain, use Belden 1120A or equivalent.

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The connector used to wire into this interface is a 5-point screw type commonly known as a “phoenix” connector. For 4-wire communication, connect the wires to the terminal block as show in Figure 4–6.

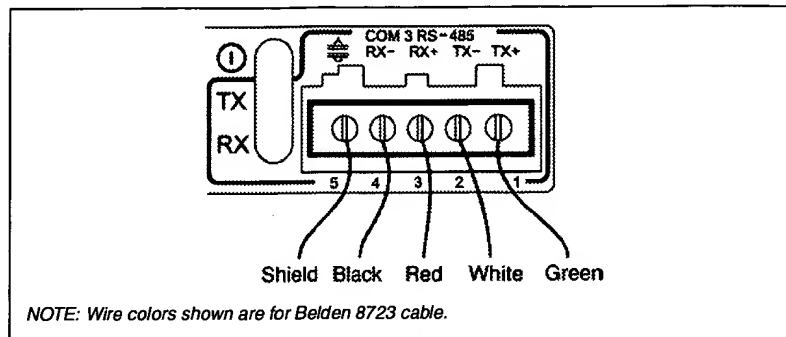


Figure 4–6 Communications wiring for 4-wire cable

For 2-wire communication, connect the white wire to the Tx– terminal and the blue wire to the Tx+ terminal as shown in Figure 4–7. Then connect a jumper wire from terminal Tx– to terminal Rx– and another jumper wire from terminal Tx+ to terminal Rx+. Connect the shield wire to the shield terminal.

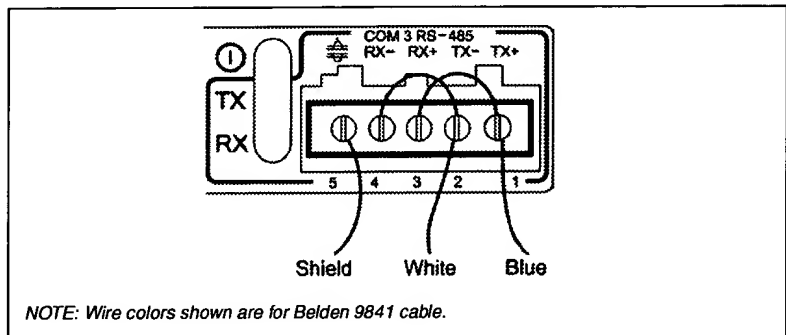


Figure 4–7 Communications wiring for 2-wire cable

RS-485 LEDs

One set of LEDs is provided for the RS-485 port: a yellow LED which illuminates when the ECC is receiving data (RX) and a green LED which illuminates when data is transmitted (TX).

NOTE: A third LED (green) next to the RS-485 RX and TX LEDs is the ECC power LED. It illuminates steadily when the ECC is receiving control power.

Biasing

On RS-485 daisy chains, correct biasing is required to ensure reliable communications. Traditionally, a Multipoint Communications Adapter (part number MCA-485) is used at the beginning of the daisy chain. However, no external MCA is necessary with the ECC because the adapter circuitry is built in.

Termination

RS-485 daisy chain termination is required to ensure reliable communications. The last device on the daisy chain usually needs to have a Multipoint Communications Terminator (part number MCT-485 or MCTAS-485). Refer to the instruction bulletin for the last device on the daisy chain to determine whether an MCT is required. If one is, contact your local sales representative.

Daisy Chain Maximum Distances

The maximum number of devices capable of being supported on a single daisy chain is determined based on the combination of baud rate, the length of the daisy chain, and the types of RS-485 devices (2-wire/4-wire) on the daisy chain. The RS-485 interface will support daisy chains that fall within the specifications shown in Tables 4-2 and 4-3.

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Table 4-2: 4-Wire Daisy Chain Maximum Distances

Baud Rate	Maximum Distances	
	1-16 Devices	17-32 Devices
1200	10,000 ft. (3,048 m)	10,000 ft. (3,048 m)
2400	10,000 ft. (3,048 m)	5,000 ft. (1,524 m)
4800	10,000 ft. (3,048 m)	5,000 ft. (1,524 m)
9600	10,000 ft. (3,048 m)	4,000 ft. (1,219 m)
19200	5,000 ft. (1,524 m)	2,500 ft. (762 m)
38400	5,000 ft. (1,524 m)	1,500 ft. (457 m)

Table 4-3: 2-Wire Daisy Chain Maximum Distances

Baud Rate	Maximum Distances	
	1-8 Devices	9-16 Devices
1200	10,000 ft. (3,048 m)	10,000 ft. (3,048 m)
2400	10,000 ft. (3,048 m)	5,000 ft. (1,524 m)
4800	10,000 ft. (3,048 m)	5,000 ft. (1,524 m)
9600	10,000 ft. (3,048 m)	4,000 ft. (1,219 m)
19200	5,000 ft. (1,524 m)	2,500 ft. (762 m)
38400	2,500 ft. (762 m)	1,500 ft. (457 m)

Ethernet Ports

The ECC has two on-board Ethernet ports: 10/100BaseTX Twisted Pair and 100BaseFX. Figure 4–8 shows a typical network application.

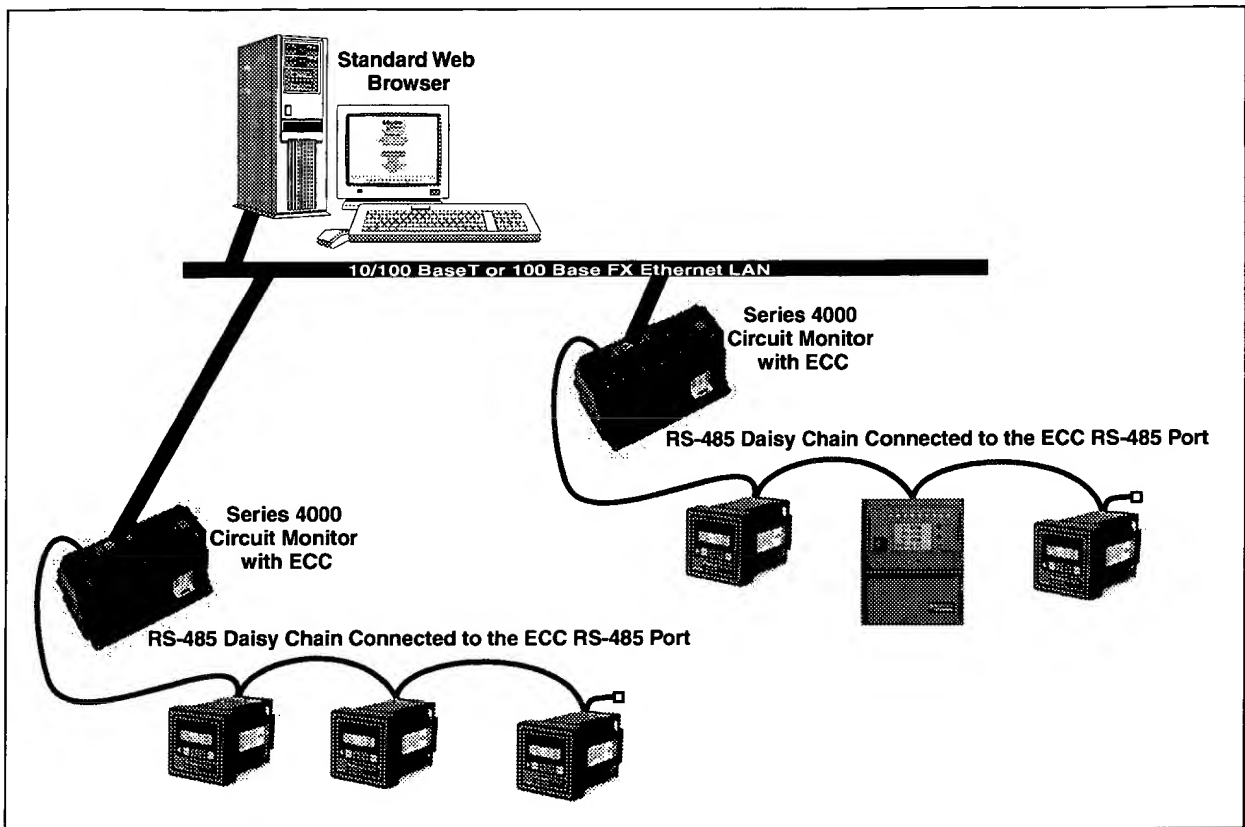


Figure 4–8 Series 4000 Circuit Monitor with ECC in typical network application

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10/100BaseTX RJ-45 Twisted Pair

This Ethernet port drives a twisted pair cable up to 328 ft. (100 m). Use data grade twisted-pair wire. This wire *must* have a characteristic impedance of 100 ohms and meet the EIA/TIA Category 5 standard wiring specifications. The cable can be either Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP). UTP is commonly used in the United States, and STP is commonly used in Europe.¹

100BaseFX Fiber-Optic

The ECC on-board fiber-optic port allows the CM4000 to communicate with a fiber-optic based Ethernet LAN. The port is a duplex LC connector receptacle and is compatible with 1300 nm wavelength multimode fiber connections. It is optimized for 62.5 or 50/125 micron multimode graded index glass optical fiber. The transceiver is capable of signal integrity in up to 6,562 ft. (2,000 m) of multimode fiber. This port supports both half-duplex and full-duplex fiber-optic cable.

NOTE: The ECC is shipped with a dust cover inserted into the fiber-optic port because the port is very sensitive to dust. The dust cover should remain in the fiber-optic port at all times except when it is removed to insert a fiber-optic cable. Retain the dust cover for future use.

Ethernet LEDs

The two Ethernet ports share one set of LEDs: a yellow LED which illuminates when the ECC is receiving data (RX) and a green LED which illuminates when data is transmitted (TX). A third light, LK (Link), illuminates when there is a proper Ethernet connection.

NOTE: Only one Ethernet port can be used at a time.

RESTORING POWER

NOTE: If the host circuit monitor is mounted in an enclosure, make sure to remove all tools from the enclosure. Then install all covers and close all doors to the enclosure before restoring power.

Turn power back on in this order:

1. Un-short the CTs.
2. Put PT fuses back or turn on the disconnect switch.
3. Turn on control power to the circuit monitor.
4. If another option card is installed, restore power to it.

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1. For CE applications, do not use IBM Type 1 Cabling (STP at 150 ohms).

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SETTING UP THE ECC VIA THE SERIES 4000 CIRCUIT MONITOR DISPLAY

Prior to setting up the ECC, obtain a unique IP address, subnet mask, router address, and the Ethernet physical connection (fiber or twisted pair) for the CM4000 from your network administrator. You will use this information to configure the ECC via the CM4000 local display.

Initial Local Setup

NOTE: For more information on Series 4000 Circuit Monitor display operation, refer to the POWERLOGIC Circuit Monitor Series 4000 instruction bulletin.

After installing the ECC in the CM4000, you are ready to set up the ECC via the CM4000 local display. Follow these steps:

1. From the CM4000 main menu, select Setup. The password prompt displays.
2. Select your password. The circuit monitor default password is 0. The Setup menu displays. Select Communications.

```
SETUP
  Display
→ Communications
  Meter
  Alarm
  I/O
  Passwords
```

3. The Communications setup screen displays. Select Ethernet Option.

```
Comms Setup-----
  RS-485
  RS-232
  Display IR
→ Ethernet Option
```

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4. The Ethernet Setup screen displays.

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```

Ethernet Setup-----
→ IP Address          0.0.0.0
Subnet Mask          255.255.255.255
Router               0.0.0.0
Port Type            UTP
  
```

Table 5–1 describes the options on this menu.

5. Use the arrow buttons to scroll to the menu option you want to change.
6. Press the enter button to select the value. The value begins to blink. Use the arrow buttons to scroll the available values. To select the new value, press the enter button.
7. Use the arrow buttons to scroll through the other options on the menu, or, if you are finished, back out of the menu and, when prompted to save, answer Yes.

Table 5–1: Ethernet Communication Setup Parameters¹

Option	Available Values	Selection Description	Default
IP Address	0.0.0.0 to 255.255.255.255	The unique IP address of the ECC.	0.0.0.0
Subnet Mask ²	0.0.0.0 to 255.255.255.255	The unique subnet mask of your network.	255.255.255.255
Router ²	0.0.0.0 to 255.255.255.255	Designates the router used to communicate to other segments.	0.0.0.0
Port Type	UTP Fiber full duplex Fiber half duplex	UTP—10/100BaseTX communications Fiber—100Base FX fiber-optic communications	UTP

1. After the initial setup, the ECC is accessible via Ethernet and the remaining ECC setup can be done via HTML and a standard web browser.
2. Optional if communications are over an isolated network only.

NOTE: The ECC HTML pages are not accessible via the circuit monitor local display. The following section tells how to set up and access these pages via a network.

SETUP VIA A NETWORK OR THE INTERNET

This section tells how to configure the ECC over a network or the Internet. After you set up Ethernet parameters using the Series 4000 Circuit Monitor display, the ECC is accessible via Ethernet and standard web browsers such as Internet Explorer (version 5.0 or higher recommended). All ECC setup information is stored in the circuit monitor into which the ECC is inserted. Thus, one ECC can be exchanged with another ECC without affecting these settings.

Log Into the ECC

To log into the ECC via an Ethernet network, follow these steps:

Launch your Internet web browser (Internet Explorer v. 5.0 or higher is recommended).

Enter the ECC IP address (for example 221.234.252.39) into the URL address field (Figure 5–1) and press Enter.



Figure 5–1 IP address entered in URL address field

NOTE: If this is the first time you have accessed the ECC via a web browser, the password log-in page displays. The default password is "admin", all lower case. If you are the administrator, it is highly recommended, for security reasons, that you change this default password at this time. See "Password Administration" on page 30 for more information. After you have logged in, you will have the option of bypassing the password login for some pages so you can bookmark an HTML page and go directly to it. See "Disabling Passwords" on page 30 for more information.

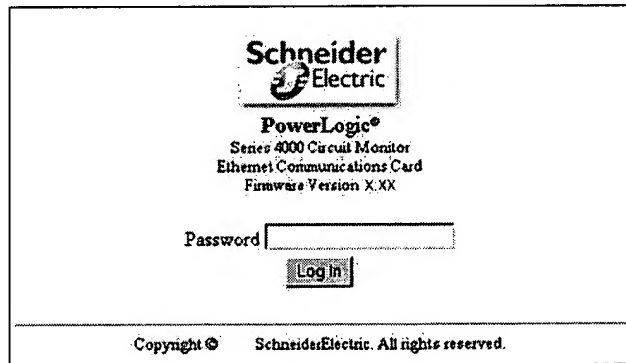
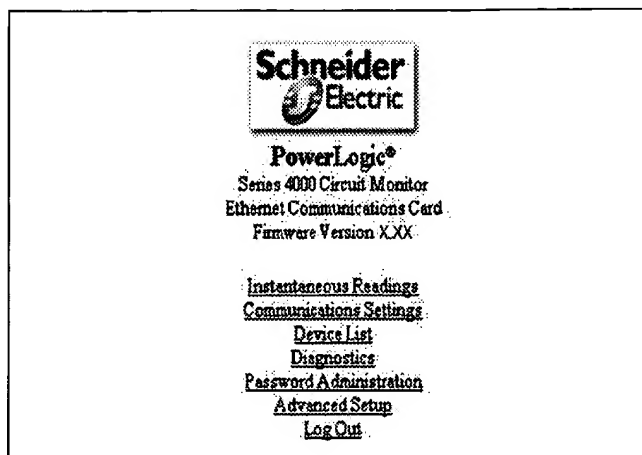


Figure 5–2 ECC Log In page

ECC Home Page

The ECC Home page displays (Figure 5–3). The list of available options on this page varies depending on the level of access assigned in the password administration option.

REDACTED**Figure 5–3 ECC Home page****Instantaneous Readings**

No set up is required for the Instantaneous Readings page. For more information, see “Chapter 6—Real-Time Device Monitoring” on page 35.

Custom Pages

No set up is required for custom pages. For more information, see “Chapter 7—Transferring HTML Pages Via FTP” on page 43.

Accessible custom pages (those stored in the host circuit monitor memory) will be listed on the ECC Home page between Instantaneous Readings and Communications Settings.

Setup Options

The standard options shown on the ECC home page are summarized in Table 5–2. Following the table, each option is explained in more detail.

Table 5–2: ECC Setup Options

Option	Description	See Page
Communication Settings	Set up or modify Ethernet and serial communication parameters.	26
Device List	Identify serial devices on the daisy chain.	27
Diagnostics	Troubleshooting and miscellaneous ECC information.	29
Instantaneous Readings	Series 4000 Circuit Monitor real-time meter readings. <i>No set up is required.</i>	35
Password Administration	Set up and change user passwords and access levels.	30
Advanced Setup ¹	Change ECC timing values.	31
Log Out	Close ECC client session.	32
Custom Pages	Five default custom pages are embedded in the CM4000, with others available. These can be modified to fit your specific application.	43

1. Accessible by administrator only.

Communications Settings

Figure 5–4 shows the Communications Settings page. You will set up Ethernet and RS-485 ports here. After changing a value, you *must* click the update button for changes to take effect.

REDACTED

Communications Settings	
Ethernet MAC: 00 80 67 80 00 08	RS485 Port
IP Address 160 200 216 86	Baud Rate 9600
Subnet Mask 255 255 255 0	Parity Even
Router Address 160 200 216 10	Mode 4 Wire
Media Type Twisted Pair	
Update	
Home	

NOTE: The Update button will not be viable if a user has "view only" access.

Figure 5–4 Communications Settings page

NOTE: If you change any Ethernet parameter on the Communications Settings page and click update, the ECC resets and the new settings immediately go into effect. Because of the reset, you will need to log in to the ECC again. To log in, type the IP address into the URL address field and press Enter.

Ethernet Port Setup Via LAN

After you assign the initial TCP/IP address to the ECC through the circuit monitor display, you can go to the Communications Settings HTML page via a standard web browser and change the ECC TCP/IP setup (Figure 5–4). The following parameters are necessary for TCP/IP setup and must match your network LAN:

- IP address
- subnet mask
- router address
- media type (twisted pair or fiber optic half- or full-duplex)

RS-485 Serial Port Setup

The RS-485 setup information consists of baud rate parity, and port mode (Table 5–3). The baud rate and parity you assign must match the settings for attached RS-485 devices (all devices must have the same baud rate and parity settings). Set the port mode according to whether your daisy chain is 2-wire or 4-wire.

Table 5–3: RS-485 Setup Parameters

Parameter	Options
Baud Rate	1200, 2400, 4800, 9600, 19200, 38400
Parity	None, Even
Mode	4-Wire; 2-Wire

Device List

Figure 5–5 shows the HTML Device List page.

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The host circuit monitor MODBUS device address always appears in the first address slot.

NOTE: The address 1 is shown here as an example. After you set up your ECC, the host circuit monitor's actual MODBUS device address will display in this first slot.

Device List	
Address	Protocol
1	N/A
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="text"/>	Modbus
<input type="button" value="Update"/>	

[Home](#)

NOTE: The actual page may show up to 63 devices.

Figure 5–5 Device List page

Keep in mind the following points when setting up the Device List:

- MODBUS/JBUS devices do not have to be defined in the Device List.
- POWERLOGIC protocol (SY/MAX) devices must be defined in the Device List.
- Up to 31 devices can be defined on the Device List page without a repeater.
- To communicate with the host circuit monitor via MODBUS/TCP, use the circuit monitor MODBUS device address. This address will always be the first address listed on the Device List (in Figure 5–5, this address is 1).

Table 5–4 shows the address range available for various protocols.

Table 5–4: RS-485 Device Definitions Address Range

Protocol	Available Device Address Range
MODBUS, JBUS	1 through 247
POWERLOGIC	1 through 199

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NOTES:

- ***Do not assign address 1 to any POWERLOGIC protocol device on a mixed-mode daisy chain.***
- ***Do not assign address 16 to any MODBUS or JBUS device if you have a mixed-mode daisy chain (for example a single daisy chain with some RS-485 devices using POWERLOGIC protocol and other devices using MODBUS/JBUS protocol).***

For information on adding additional address/protocol positions to the Device List, see “Advanced Setup” on page 31.

Diagnostics

The ECC displays diagnostics data on this page. In addition to its information value, this page may be helpful in troubleshooting network problems. This page also contains information about your specific ECC, including the serial number, manufacturing date, and Media Access Control (MAC) address. Pressing Reset clears the accumulative readings counters.

NOTES:

- This page shows accumulated readings since the ECC was last activated. If power to the ECC is lost, all values reset to zero. The reset button will not display if a user has "view only" access.
- The HTML User Logins since the ECC was last activated are shown at the bottom of the page.

Figure 5-6 shows the Diagnostics page.

Diagnostics			
Boot Time .		Current Time	
RS-485 Port		Dual Port RAM	
Timeouts	0	Timeouts	0
Checksum / CRC Errors	0	Checksum / CRC Errors	0
Protocol Errors	0	Protocol Errors	0
Outbound Read Messages	0	Outbound Read Messages	0
Outbound Write Messages	0	Outbound Write Messages	0
Inbound Read Messages	0	Inbound Read Messages	0
Inbound Write Messages	0	Inbound Write Messages	0
MBTCP		Ethernet	
Timeouts	0	CRC Errors	0
Checksum / CRC Errors	0	Alignment Errors	0
Protocol Errors	0	Code Errors	0
Outbound Read Messages	0	Long Frame Errors	0
Outbound Write Messages	0	Short/Runt Frame Errors	0
Inbound Read Messages	0	Maximum Collision	0
Inbound Write Messages	0	Card Information	
Active Inbound Connections	0	Processor Utilization	2%
Active Outbound Connections	0	MAC Address	00 50 67 50 00 00
Inbound Connections	0	Serial Number	5
Outbound Connections	0	Model Number	1
Maximum Inbound Connections	0	Hardware Version	0000
Maximum Outbound Connections	0	Manufacture Date	Jun 21, 2001
HTML User Logins			
Admin User = 1	User 1 = 0	User 2 = 0	User 3 = 0
[Reset]			

Figure 5-6 Diagnostics page

Password Administration

Figure 5–7 shows the Password Administration HTML page. There are four password accounts on the page, one administrator account and three user password accounts. The default passwords assigned to user accounts are “master,” “engineer,” and “operator” (Figure 5–7). The default passwords are editable by the administrator.

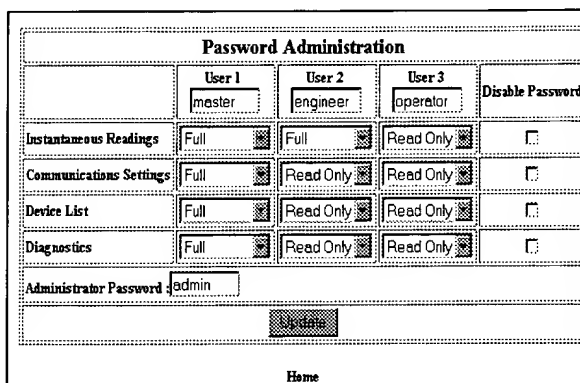
Administrator Account

The administrator account is always granted full access to every HTML page available through the ECC. The administrator account password is configurable. Only the administrator can access and change passwords. The administrator password can be from one to eight alphanumeric characters and is case-sensitive. The default administrator password is “admin”.

NOTE: If you are the administrator, it is highly recommended, for security reasons, that you change this default password the first time you log in.

User Account

The default access levels for all user accounts are shown in Figure 5–7. The administrator can grant one of three access levels for each HTML page to each user: None (no access), Read Only, and Full (access).



The screenshot shows a web form titled "Password Administration". It contains a table with columns for "User 1", "User 2", "User 3", and "Disable Password". The rows represent different system functions: "Instantaneous Readings", "Communications Settings", "Device List", and "Diagnostics". Each cell in the table contains a dropdown menu with "Full", "Read Only", or "None" as options. The "Administrator Password" field is set to "admin". There is an "Update" button and a "Home" link at the bottom.

	User 1	User 2	User 3	Disable Password
	master	engineer	operator	<input type="checkbox"/>
Instantaneous Readings	Full	Full	Read Only	<input type="checkbox"/>
Communications Settings	Full	Read Only	Read Only	<input type="checkbox"/>
Device List	Full	Read Only	Read Only	<input type="checkbox"/>
Diagnostics	Full	Read Only	Read Only	<input type="checkbox"/>
Administrator Password	admin			
Update				
Home				

Figure 5–7 Password Administration page (default values shown)

Up to 10 concurrent users can be logged into the ECC at any given time, using any combination of passwords. The amount of time the ECC waits during an inactivity period before “expiring” access is configurable (see “Advanced Setup” on page 31). During normal operations, it is recommended that each user return to the ECC home page and select “log out” when finished interfacing with the ECC; doing so immediately releases that access privilege for another user.

Disabling Passwords

The administrator can disable the password for many HTML pages. This disables security for that page, allowing users to bookmark the page for quick access without receiving the password prompt. For information on bookmarking HTML pages, see “Bookmarking an HTML Page” on page 32.

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Table 5–5 summarizes password accounts, default passwords, and access levels.

Table 5–5: Password Administration Summary

Password Account	Default Password	Convention ¹	Access
Administrator	admin	1-8 characters	Full access to all passwords and HTML pages
User 1	master	1-8 characters	Choosing from the following options, the administrator assigns access levels for these HTML pages: Instantaneous Readings, Communication Settings, Device List, Diagnostics, and Custom Pages. Access levels are: <ul style="list-style-type: none">• None (no access)• Read Only• Full (full access; same as Administrator Access)
User 2	engineer	1-8 characters	
User 3	operator	1-8 characters	

1. Case-sensitive, alphanumeric characters only.

Advanced Setup

The Advanced Setup HTML page is accessible by the administrator password only. This setup page allows advanced users to tweak ECC timing values that normally should never be changed. ECC parameters and corresponding values are show in Table 5–6.

Table 5–6: Advanced Communication Setup Parameters

Parameter	Range of Values	Description
HTML User Timeout	1–255 minutes	Maximum time allowed for a user to stay idle before the ECC expires that user's access.
Timeout for RS-485 Port	3–10 seconds	Maximum time the ECC will wait for requested information from the RS-485 daisy-chained devices.
Instantaneous Readings Refresh Rate	5–300 seconds	Interval at which Instantaneous Readings page updates readings.
Timeout for Host Circuit Monitor	3–10 seconds	Maximum time the ECC will wait for requested information from the Series 4000 Circuit Monitor.
Number of Viewable Devices	2–64 devices	Number of viewable devices in the HTML Device List page.

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Advanced Setup	
HTML User Timeout [10] Minutes (1 - 255)	Timeout for Circuit Monitor Host [3] Seconds (3 - 10)
Timeout for RS485 Port [3] Seconds (3 - 10)	Number of Viewable Devices [16] (2 - 64)
Instantaneous Readings Refresh Rate [10] Seconds (5 - 300)	
Update Settings	
<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Delete Custom Page</p> <p>(Select Page) <input type="text"/></p> <p style="text-align: center;">Delete Page</p> </div>	
Home	

Figure 5–8 Advanced Setup page

As shown in Figure 5–8, you can also delete custom pages from the Advanced Setup page. To do so, select the page you want to delete and click Delete Page.

Log Out

To log out of the ECC HTML pages, go to the ECC Home page and click Log Out. This ends your client session. The Log In page displays so you will be able to quickly log back in when you are ready.

Bookmarking an HTML Page

To bookmark an HTML page, follow these steps:

1. Disable security for the page you want to bookmark by:
 - a. logging in using the administrator password
 - b. opening the Password Administration page and clicking the box in the Disable Password column for the HTML page you are going to bookmark
 - c. clicking Update
2. Type the HTML page address in the address field of your web browser.

Follow this convention: `http://(IP address)/(name of page).htm`

For example, if you want to bookmark the Instantaneous Readings page, and the IP address of the ECC is 157.198.216.86 type:

`http://157.198.216.86/InstantaneousReadings.htm`

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Page names are case-sensitive. Capitalize only the first letter of each word; all other letters are lowercase. The correct HTML page naming convention for each HTML page is shown in Table 5–7.

NOTES:

- You can not bookmark the Password Administrator or Advanced Setup pages.
- If you try to bookmark an HTML page using your web browser software, five access token numbers will be added to the URL after “htm”. These five numbers must be removed to access the page.

Table 5–7: Naming Conventions When Bookmarking HTML Pages

To Bookmark This Page:	Use this Naming Convention: (substitute your correct ECC IP Address for the one shown)
Instantaneous Readings	http://157.198.216.86/InstantaneousReadings.htm
Communications Settings	http://157.198.216.86/CommunicationsSetup.htm
Device List	http://157.198.216.86/DeviceList.htm
Diagnostics	http://157.198.216.86/Diagnostics.htm
Log Out	http://157.198.216.86/LogOut.htm
Custom Pages	<a href="http://157.198.216.86/CustomPageX<sup>1</sup>.htm">http://157.198.216.86/CustomPageX¹.htm

1. Substitute the custom page number for “X”.

REDACTED

CHAPTER 6—REAL-TIME DEVICE MONITORING

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INTRODUCTION

The ECC has the capability to show real-time device data from a single device or multiple devices, including the host Series 4000 Circuit Monitor or any other attached devices.

INSTANTANEOUS READINGS (CM4000 HOST CIRCUIT MONITOR)

Included in the ECC pages is one non-customizable HTML page for viewing instantaneous readings from the host Series 4000 Circuit Monitor (Figure 6–1). This page is embedded into the ECC and is very similar to the System Manager Software (SMS) instantaneous page for the CM4000.

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Instantaneous Readings		Time : 15:10:48	
CIRCUIT MONITOR		Date	
Last Reset min/max	15:54:15		
Current (Amps)	Minimum	Present	Maximum
Phase A	36	36	37
Phase B	36	36	37
Phase C	36	36	37
3 Phase Average	36	36	37
Neutral / Residual	107	109	110
Ground	0	0	0
Apparent RMS	40	40	40
Voltage (Volts)			
Phase A-B	0	0	0
Phase B-C	0	0	0
Phase C-A	0	0	0
3 Phase Average (L-L)	0	0	0
Phase A-N	123	123	123
Phase B-N	123	123	123
Phase C-N	123	124	124
3 Phase Average (L-N)	123	123	123
Powers			
Real Power (kW)	6	6	6
Reactive Power (kVAR)	12	12	12
Apparent Power (kVA)	13	13	14
Power Factors			
Phase A PF	0.956 Lag	0.956 Lag	0.956 Lag
Phase B PF	0.956 Lag	0.956 Lag	0.956 Lag
Phase C PF	0.957 Lag	0.957 Lag	0.957 Lag
PF 3-Ph Total	0.957 Lag	0.957 Lag	0.957 Lag
Frequency	59.91	60.00	60.09
Temperature(degrees C)	32.5	35.5	40.5
Temperature(degrees F)	90.5	95.9	104.9
Home			
Copyright © Schneider Electric. All Rights Reserved.			

Figure 6–1 Instantaneous Readings page

The metered values automatically update at the intervals you specify on the Advanced Setup page (see “Advanced Setup” on page 31.) For immediate updating of metered values, click Refresh on your browser.

HTML CUSTOM PAGES

Five custom HTML templates are stored in the CM4000 circuit monitor. As a backup, these pages are also stored on a diskette shipped with the ECC. The pages are configured to read data from the host CM4000. You can also configure them to provide a summary of a few or all of the devices on the daisy chain.

NOTE: A maximum of five custom HTML pages can be stored in the circuit monitor. If you need to delete a custom page from the circuit monitor to make room for another one, you can restore the deleted page in the future. To do so, load custom pages from the diskette you received with the ECC onto your computer hard drive and then upload them to the circuit monitor (where they are stored).

Custom pages can be uploaded from your computer hard drive to the host CM4000 (where they are stored) via File Transfer Protocol (FTP). For more information on custom HTML pages, see “Transferring HTML Pages Via FTP” on page 44.

NOTE: After custom pages are uploaded to your ECC, their names will appear on the ECC Home page between Instantaneous Readings and Communications Settings.

CREATING HTML CUSTOM DEVICE READINGS TABLES

You can create a new custom HTML page by modifying the code of an existing custom page.

NOTE: This section is intended for users already familiar with HTML and JavaScript. If you are not familiar with these topics, you can contract POWERLOGIC Power Management Engineering Services to modify HTML custom pages to fit your specific application. For more information, contact your local sales representative.

This section shows a sample custom device table and the code used to create it. The custom device tables are created by users very familiar with HTML and JavaScript. Each page is written in HTML with special delimiters that instruct the ECC to dynamically get register information from a device.

When creating custom HTML pages, remember that the maximum file size for each page is 20 KB or less. A maximum of five custom pages totalling 100 KB can be stored in the host circuit monitor at a time.

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The delimiters at the beginning (PL__) and end (__PL) of a string instruct the ECC to parse this string and dynamically fill it with register data. Table 6–1 shows supported POWERLOGIC tags and also, an HTML example of how they can be used.

Table 6–1: POWERLOGIC HTML Tags

Function Code	Function Name	POWERLOGIC Tag	Example of Data Returned
0	SY/MAX Block Read—Registers	<DeviceID>^<RegisterAddress>[<NumberOfRegisters>] example tag = PL__1^1003[5]__PL	85,86,84,25,56
4	SY/MAX Scattered Read—Registers	<DeviceID>^<RegisterAddress1>,<RegisterAddress2>,etc example tag = PL__1^1003,1004,1005,1006,1007	85,86,84,25,56
3	Modbus Block Read—Holding Registers	<DeviceID>^H<RegisterAddress>[<NumberOfRegisters>] example tag = PL__1^H1003[5]__PL	85,86,84,25,56
4	Modbus Block Read—Input Registers	<DeviceID>^I<RegisterAddress>[<NumberOfRegisters>] example tag = PL__1^I1003[5]__PL	85,86,84,25,56
100	Modbus Scattered Read—Holding Registers	<DeviceID>^S<RegisterAddress1>,<RegisterAddress2>,etc example tag = PL__1^S1003,1004,1005,1006,1007__PL	85,86,84,25,56

Example: An HTML Custom Page and Source Code

Figure 6–2 shows an example of a custom HTML page.

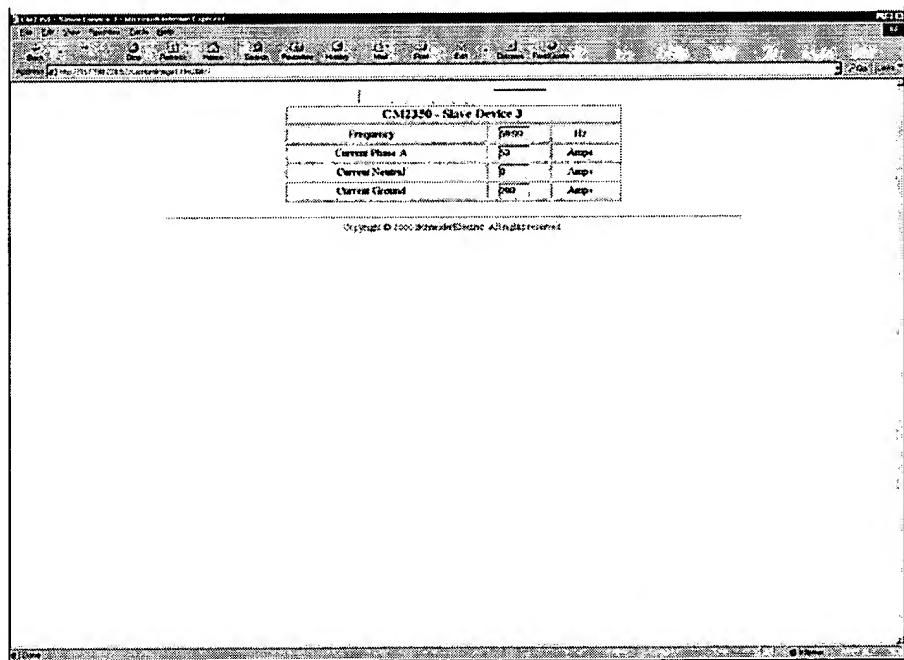


Figure 6–2 Example of a device HTML custom page

The source code used to develop the device HTML custom page in Figure 6–2 is shown below.

```
<html>

<head>
<META HTTP-EQUIV="refresh" CONTENT="5">
<title>CM2350 - Slave Device 3</title>
</head>

<body>
<form name="view_form">
  <p align="center">
    <input type="text" name="time_spot" size="40">
    <table border="1" width="600">
      <tr>
        <td width="600"><p align="center"><font size="4"><b>CM2350 - Slave
          Device 3</b></font></p>
        </td>
      </tr>
    </table>
    <table border="1" width="600">
      <tr>
        <td>
          <td width="300">
            <p align="center">Frequency</p>
          </td>
          <td align="center" width="90"><p align="center"><input
            type="text" size="5" name="frequency"></p>
          <td width="100">
            <p align="center">Hz</p>
          </td>
        </tr>
        <tr>
          <td width="300">
            <p align="center">Current Phase A</p>
          </td>
          <td align="center" width="90"><p align="center"><input
            type="text" size="5" name="currentphasea"></p>
          <td width="100">
            <p align="center">Amps</p>
          </td>
        </tr>
        <tr>
          <td width="300">
            <p align="center">Current Neutral</p>
          </td>
          <td align="center" width="90"><p align="center"><input
            type="text" size="5" name="currentneutral"></p>
          <td width="100">
            <p align="center">Amps</p>
          </td>
        </tr>
        <tr>
          <td width="300">
            <p align="center">Current Ground</p>
          </td>
          <td align="center" width="90"><p align="center"><input
```

REDACTED

```

        type="text" size="5" name="currentground"></p>
        <td width="100">
            <p align="center">Amps</p>
        </td>
    </tr>
</table>
<br><HR SIZE="1" width="66%"><CENTER><font face="Times Roman"
size="2">Copyright © 2000 SchneiderElectric. All rights reserved.</font></CENTER>
</form>

```

NOTE: This is the
POWERLOGIC tag.

```

<script language="JavaScript">
function ShowFreq()
{
    Registers = [PL__3^2020,2021,2022,2025,1001,1003,1006,1007__PL];
    ScaleFactorA = Registers[0];
    ScaleFactorB = Registers[1];
    ScaleFactorC = Registers[2];
    ScaleFactorF = Registers[3];
    Frequency = Registers[4];
    CurrentPhaseA = Registers[5];
    CurrentNeutral = Registers[6];
    CurrentGround = Registers[7];
    ScaleFactorAMultiplier = 0;
    ScaleFactorBMultiplier = 0;
    ScaleFactorCMultiplier = 0;
    ScaleFactorFMultiplier = 0;
    TheTime = new Date();

    switch (ScaleFactorA)
    {
        case -2:
            ScaleFactorAMultiplier = 0.01;
            break;
        case -1:
            ScaleFactorAMultiplier = 0.1;
            break;
        case 1:
            ScaleFactorAMultiplier = 10;
            break;
        default:
            ScaleFactorAMultiplier = 1;
            break;
    }
    switch (ScaleFactorB)
    {
        case -2:
            ScaleFactorBMultiplier = 0.01;
            break;
        case -1:
            ScaleFactorBMultiplier = 0.1;
            break;
        case 1:
            ScaleFactorBMultiplier = 10;
            break;
        default:
            ScaleFactorBMultiplier = 1;
            break;
    }
}

```

REDACTED


```

    }
    switch (ScaleFactorC)
    {
        case -2:
            ScaleFactorCMultiplier = 0.01;
            break;
        case -1:
            ScaleFactorCMultiplier = 0.1;
            break;
        case 1:
            ScaleFactorCMultiplier = 10;
            break;
        default:
            ScaleFactorCMultiplier = 1;
            break;
    }
    switch (ScaleFactorF)
    {
        case -1:
            ScaleFactorFMultiplier = 0.1;
            break;
        default:
            ScaleFactorFMultiplier = 0.01;
            break;
    }
    Frequency *= ScaleFactorFMultiplier;
    CurrentPhaseA *= ScaleFactorAMultiplier;
    if (CurrentNeutral == -32768)
        CurrentNeutral = "N/A";
    else
        CurrentNeutral *= ScaleFactorBMultiplier;
    if (CurrentGround == -32768)
        CurrentGround = "N/A";
    else
        CurrentGround *= ScaleFactorCMultiplier;
    document.view_form.frequency.value = Frequency;
    document.view_form.currentphasea.value = CurrentPhaseA;
    document.view_form.currentneutral.value = CurrentNeutral;
    document.view_form.currentground.value = CurrentGround;
    document.view_form.time_spot.value = TheTime;
}
ShowFreq();
</script>

</body>

</html>

```

REDACTED

REDACTED

CHAPTER 7—TRANSFERRING HTML PAGES VIA FTP

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REDACTED

OVERVIEW

The ECC can act as a File Transfer Protocol (FTP) server, providing a quick and easy way to download ECC firmware updates and upload HTML custom pages.

TRANSFERRING HTML PAGES VIA FTP

Five default ECC custom pages are already embedded in the Series 4000 Circuit Monitor. As a backup, those custom pages are also provided on a diskette shipped with your ECC. If you delete one or more custom pages embedded in the circuit monitor, and later want to replace the page(s), you can load the diskette files onto your computer hard drive and then upload them to the circuit monitor via FTP.

To modify the five ECC custom page templates to meet your specific applications, see “Creating HTML Custom Device Readings Tables” on page 37.

Newly created custom HTML pages will have to be uploaded to the circuit monitor via FTP.

To upload custom HTML pages into the circuit monitor via FTP, follow these steps:

NOTE: Before proceeding, we will assume you have created a folder on your computer hard drive in which to store custom HTML pages you wish to upload into the circuit monitor via FTP. In this example, we will use the folder “ecc” located on the C: drive.

1. Access DOS on your computer by selecting Start>Program>Command Prompt.
2. Type the drive you want to access (in this case **C:**) and press Enter (return).
3. Type **cd** (change directory) and the name of the folder containing the HTML pages you are going to FTP (in this example, **ecc**) and press Enter. (See Figure 7–1.)

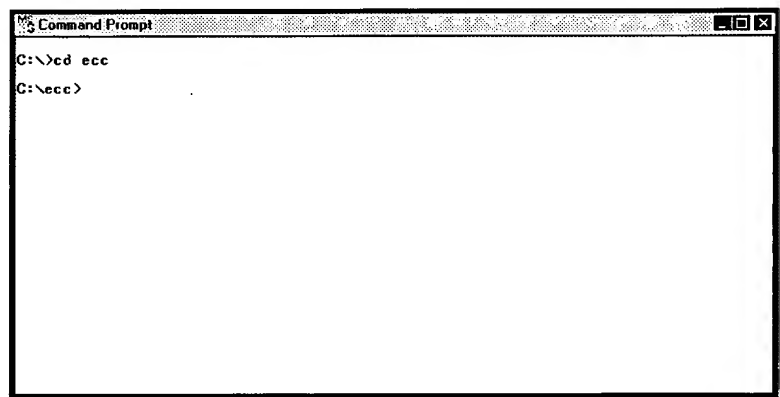


Figure 7–1 Identifying folder where HTML pages are stored

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4. Type **ftp** and the **IP address** assigned to the ECC; click enter. You should receive the message “connected to [IP address]”, indicating you are now in an FTP session.
5. At the “User (IP address:(none):)” prompt, press Enter.
6. At the password prompt (Figure 7–2), enter the administrator password (**admin** is the default password until the administrator changes it).

```

Command Prompt - Ip: ###.###.###.###
C:\>cd ecc
C:\ecc>ftp ###.###.###.###
Connected to ###.###.###.###.
220 NET-ARM FTP Server 1.0 ready.
User (###.###.###.###:(none)):
331 User (none) OK, send password.
Password:

```

NOTE: The IP address you use will display in place of ###.###.###.###

Figure 7–2 Password prompt

7. At the ftp prompt, type **send [filename]** and press Enter to initiate the ftp transfer. (In this example, we entered “send Power-Quality-real”).
NOTE: The filename you enter is case-sensitive.
8. When the upload is complete (Figure 7–3), you will see the “ftp” prompt again. If you have another HTML page to upload, type **send [filename]** and press Enter. If you are finished uploading files, type **quit** and press Enter to exit the FTP session.

```

Command Prompt - Ip: ###.###.###.###
C:\>cd ecc
C:\ecc>ftp ###.###.###.###
Connected to ###.###.###.###.
220 NET-ARM FTP Server 1.0 ready.
User (###.###.###.###:(none)):
331 User (none) OK, send password.
Password:
230 Password OK.
ftp> send Power-Quality-real.htm
200 PORT command OK.
150 About to open data connection.
226 Transfer complete
20037 bytes sent in 0.16 seconds (124.45 Kbytes/sec)
ftp>

```

NOTE: The IP address you use will display in place of ###.###.###.###

Figure 7–3 File transfer completed

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APPENDIX A—SYSTEM MANAGER SOFTWARE INTERFACE WITH THE ECC

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OVERVIEW/REQUIREMENTS

This appendix provides instructions on setting up a PC interface with the ECC. You must be running System Manager Software (SMS) version 3.2 or higher.

COMMUNICATING WITH SYSTEM MANAGER SOFTWARE (SMS) VIA THE ECC

The first requirement in establishing communications with SMS is adding a Communications Connection by defining the name and interface type of the port.

Follow these steps to add the Communications Connection (PC interface):

1. Open the appropriate system (click Open > system > “system name”), or create a new system. (See the SMS instruction bulletin or help system for information on creating a new system.)
2. On the SMS main menu, select Setup > Communications Connection.
3. In the Setup Communications Connection dialog box click Add. SMS displays the Add Communications Connection dialog box (Figure A–1).

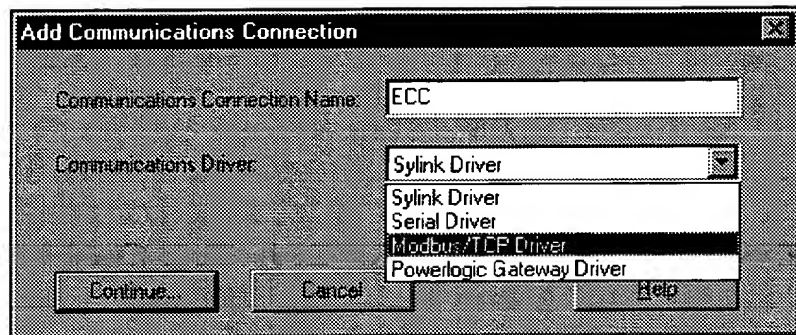


Figure A–1 Select MODBUS/TCP Driver in the Add Communications Connection dialog box

4. Type a unique name for the communication connection, up to 31 characters.
5. Select MODBUS/TCP Driver from the Communications Driver pull-down box.
6. Click Continue to proceed with setup.

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7. The Communications Connection—Modbus/TCP dialog box displays (Figure A-2).

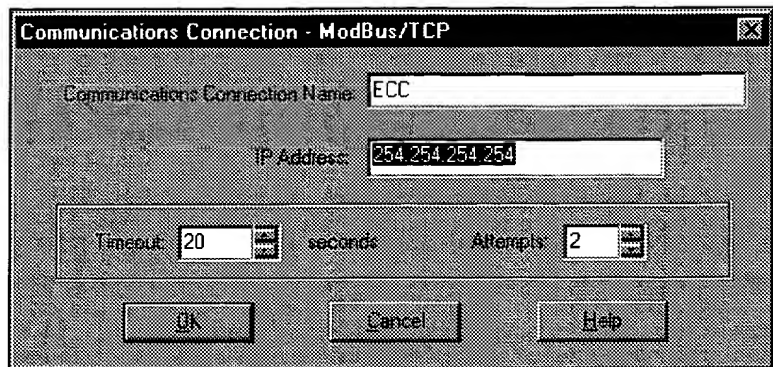


Figure A-2 Communications Connection MODBUS/TCP dialog box

8. The Communications Connection Name assigned in the previous dialog box displays (ECC in this example). Type the IP address assigned to the ECC. Click OK.

The communication connection is now defined (Figure A-3)

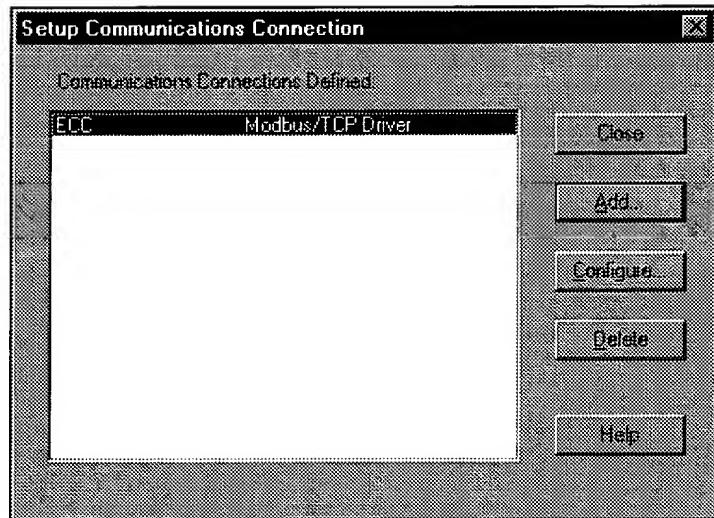


Figure A-3 Setup Communications Connection dialog box

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Adding Devices

To add devices to the SMS network server database, follow these steps:

1. On the Setup menu, click Devices/Routing... to display the Setup Devices/Routing dialog box (Figure A-4). This dialog box also lists all previously defined devices along with their device types and routes.

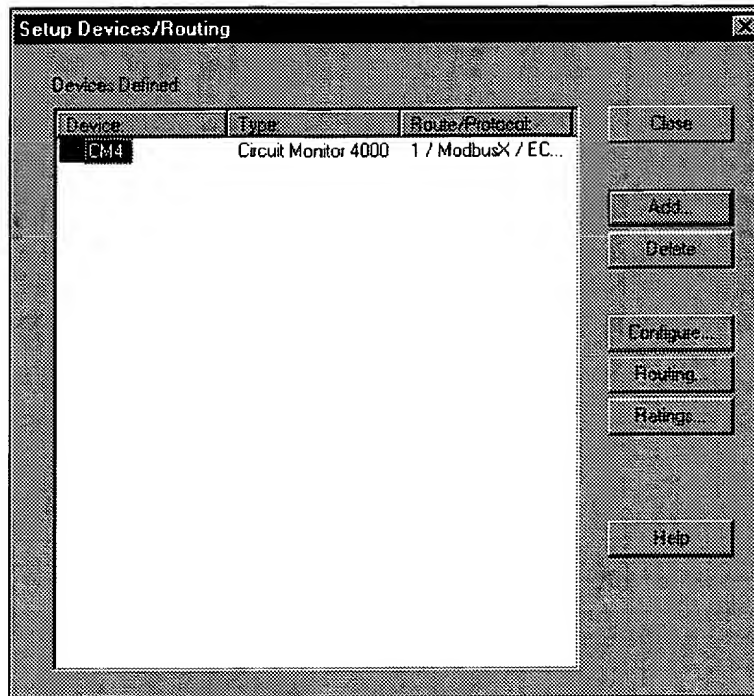


Figure A-4 Setup Devices/Routing dialog box

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2. Click Add to display the Add Device dialog box. Enter information as follows:
 - Device Name: Type a descriptive name for this device (32 characters maximum, no apostrophes), for example, *Main1 (Cube 1-A) CM4000*.
 - Device Type: Select the type of device you are adding.
 - Connection Name: Select the PC interface to which this device is connected.

NOTE: The Device Name and Connection Name you enter in this dialog box should match the names you have already assigned to the ECC and host circuit monitor.

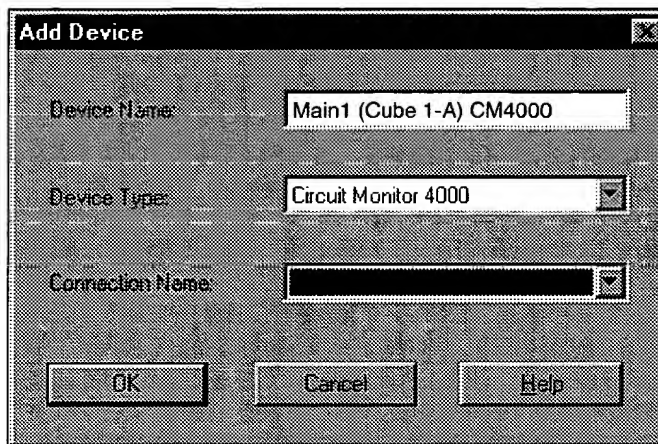


Figure A-5 Add Device dialog box

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3. Click OK and the MODBUS/TCP Device Route dialog box displays (Figure A-6). Enter information as follows:
 - In the Comm Connection Name box, select the PC port to which this device connects. SMS defaults to the connection name chosen in the Add Device dialog box (figure 6-3).
 - In the Device Address box, select the device address entered for this particular device.
 - Select the protocol by which the device is to communicate:
 - POWERLOGIC—Choose this for any POWERLOGIC device not configured for MODBUS or JBUS.
 - MODBUS with POWERLOGIC Extensions or JBUS with POWERLOGIC Extensions—Choose this for a POWERLOGIC device configured to use MODBUS or JBUS.
 - MODBUS or JBUS—Choose this for any other MODBUS or JBUS device, or for a generic MODBUS/JBUS device type.

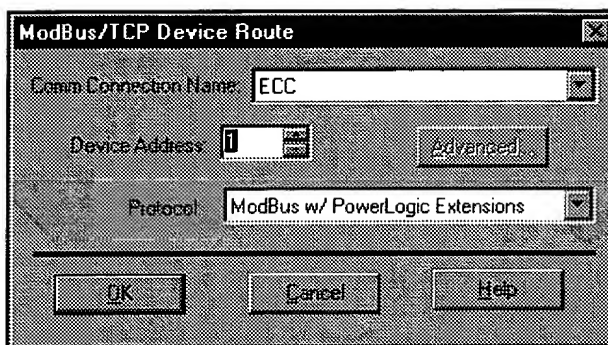


Figure A-6 MODBUS/TCP Device Route dialog box

4. Click OK.
5. Repeat steps 1-4 for each additional device you add to the system or the RS-485 daisy chain.
6. Close the MODBUS/TCP Device Route dialog box.

SMS is now configured to go online with the system just created.

For more information about SMS, refer to the SMS instruction bulletins.

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APPENDIX B—MAINTENANCE AND TROUBLESHOOTING

MAINTENANCE

The ECC does not require maintenance, nor does it contain any user-serviceable parts. If the ECC requires service, contact your local sales representative, or call the POWERLOGIC Technical Support Center for assistance.

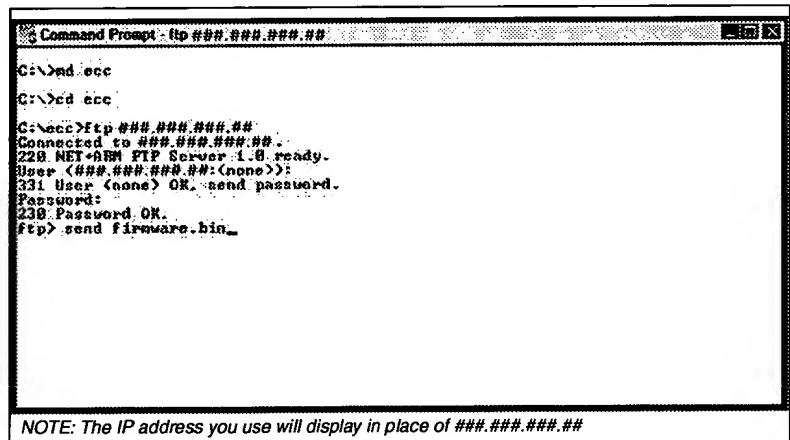
Refer to the Technical Support Contacts provided in the Series 4000 Circuit Monitor shipping carton for a list of support phone numbers by country.

Firmware Updates

Due to technological improvements, the base firmware your ECC was shipped with may be updated periodically. We recommend periodically checking with your local sales representative to see if an upgrade is available.

If an update becomes available, compare the version number with the version number shown on the ECC home page. If the update is a newer version (has a higher version number), transfer it to your computer hard drive, taking note of which folder you store it in.

Then use FTP to transfer the firmware upgrade into the ECC. To do so, follow the steps listed in “Transferring HTML Pages Via FTP” on page 44. The process is identical except that you will be sending the firmware.bin file instead of an HTML file (Figure B-1).



```
Command Prompt - ftp ###.###.###.##
C:\>cd .ecc
C:\>cd ecc
C:\ecc>ftp ###.###.###.##
Connected to ###.###.###.##.
220 NET-ARM FTP Server 1.0 ready.
User (###.###.###.##:(none)):
331 User (none) OK, send password.
Password:
230 Password OK.
ftp> send firmware.bin_
```

NOTE: The IP address you use will display in place of ###.###.###.##

Figure B-1 Sending a firmware upgrade to the ECC via FTP

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TROUBLESHOOTING

Potential problems and their possible causes are shown in Table B–1.

Table B–1: Troubleshooting

Problem	Possible Cause	Solution
Power light is not illuminated.	1. Source power is not applied or is not stable. 2. External fuse is blown or not making good contact. 3. LED is burned out.	1. Apply power or check power source. 2. Check fuse. 3. Check to see if other LEDs operate properly. If they do, contact Technical Support.
RS-485 port LEDs repeatedly blink then pause.	ECC does not have a valid IP address or subnet mask.	Get valid IP address and subnet mask from network administrator. Then configure the ECC via the circuit monitor display.
Ethernet link light not lit.	Proper link is not established.	Make sure the proper cable is used and that it is properly connected. Reset the ECC.
SMS does not connect to the ECC.	1. Incorrect IP address. 2. Incorrect subnet mask or IP router address. 3. Bad Ethernet connection (look at Ethernet receive light, which indicates traffic on network).	1. Get correct IP address. 2. Get correct subnet mask and/or IP router address. 3. Check cable connections.
SMS does not go online with devices on ECC.	ECC not functioning correctly or configuration problems.	Check status LED. Verify that the ECC communication configuration matches the SMS configuration (IP mask and IP router are identical). Verify ECC receives requests (ping ECC, if using TCP/IP, by going to c:/prompt and typing ping and ECC IP address, e.g., ping 199.0.62.41). Your network administrator can help with this. Verify that the device address is entered correctly in SMS.
RS-485 port LED repeatedly blinks 8 times.	Incorrect Series 4000 Circuit Monitor firmware.	Call Technical Support for assistance.
Forgot administrator password.	—	Call Technical Support for assistance.

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APPENDIX C—SPECIFICATIONS

This appendix contains specifications for the ECC.

Table C-1: Specifications

ENVIRONMENTAL	
Ambient Operating Temperature	–25° to +70°C
Ambient Storage Temperature	–40° to +85°C
Relative Humidity Rating (Non-condensing)	5 to 95%
Altitude (maximum)	10,000 ft. (3,167 m)
Pollution Degree	2
REGULATORY/STANDARDS	
Electromagnetic Interference (Emissions)	Radiated: FCC Part 15 Class A/CE Heavy Industrial (EN55022)
	Conducted: FCC Part 15 Class A/CE Heavy Industrial (EN55022)
Electrostatic Discharge	Air Discharge: IEC 1000-4-2 (EN61000-4-2)
Immunity to Electrical Fast Transients	Transients: IEC 1000-4-4 (EN61000-4-4)
Immunity to Electromagnetic Fields	Radiated: IEC 1000-4-3 (EN61000-4-3)
	Conducted: IEC 1000-4-6 (EN61000-4-6)
Safety	USA: UL 508 Compliant
Listings	UL, CE, cUL

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Figure C-1 shows dimensions of the ECC.

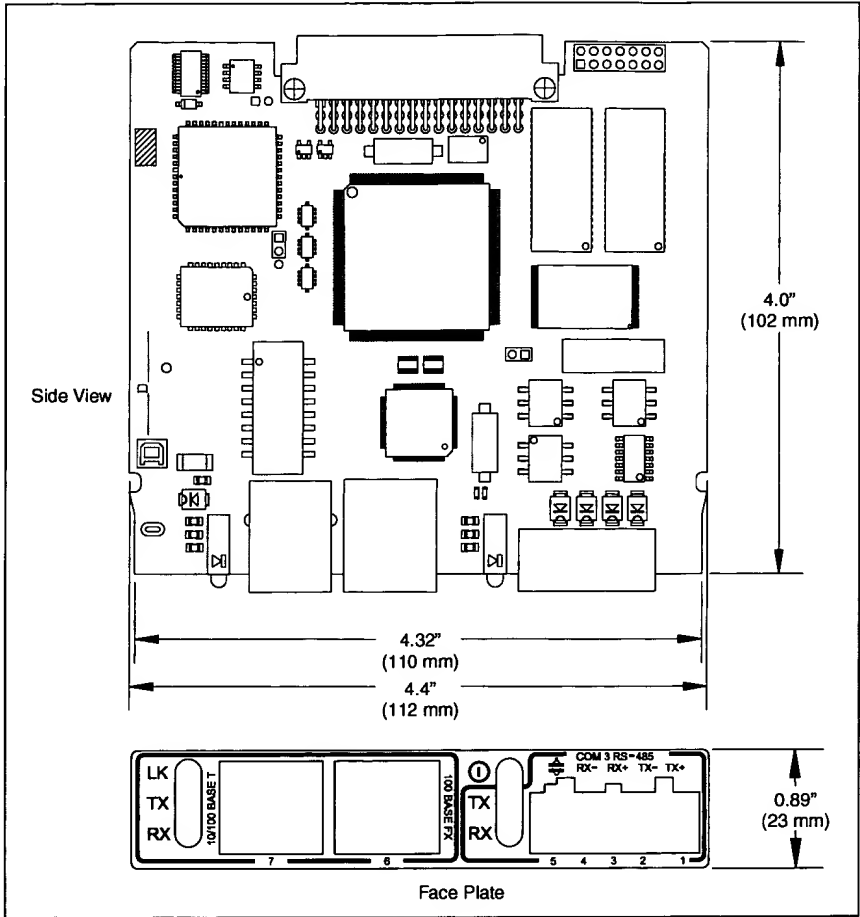


Figure C-1 ECC dimensions

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